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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,844	12/14/2001	Kevin Harris Becker	1978.EEM	8825

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Jane E. Gennaro
Assistant General Counsel, I.P.
NATIONAL STARCH AND CHEMICAL COMPANY
10 Finderne Avenue
Bridgewater, NJ 08807-0500

EXAMINER

SELLERS, ROBERT E

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/016,844	Applicant(s) BECKER ET AL.	
	Examiner Robert Sellers	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claims 8 and 9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the replies filed October 3, 2003 and March 5, 2004.

1. The amendment filed May 2, 2005 resolves the 35 U.S.C. 112, first paragraph, rejection set forth on pages 2-4 of the non-Final rejection mailed November 5, 2004 by adopting the suggestions presented in paragraph 1 of the Examiner Interview Summary Record mailed January 28, 2005.
2. The 35 U.S.C. 102(a) rejection over Capote et al. Patent No. 2001/0020071 is rescinded because the co-curing agent serve to cure the cyanate ester, bismaleimide and epoxy resin together. The newly claimed curing of the first composition with the lower curing temperature without curing the second composition with the higher curing temperature is not recited since the prior art curing involves all three curable components.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Satoh et al. Patent No. 6,187,416.

Claims 1-3 and 5 are rejected under 35 U.S.C. 102(a or b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Japanese Patent No. 55-65217 (Japanese '217) or Young Patent No. 4,816,531 or Jackson Patent No. 5,081,167.

3. The rejections are converted from 35 U.S.C. 102(a or b) rejections to 35 U.S.C. 102(a or b), or 35 U.S.C. 103(a) rejections in response to the newly claimed limitation of the first composition with the lower curing temperature curing without the curing of the second composition with the higher curing temperature is not explicitly recited. Based on the separate first and second compositions of the references containing different curable components and curatives within each composition which are B-staged, then cured, the formulations of the references would inherently exhibit a curing of one of the compositions without the curing of the other composition.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoh et al., the Japanese patent, Young or Jackson as applied to claims 1-5 hereinabove, and further in view of Roth et al. Patent No. 6,194,490; Marshall et al. Patent No. 3,746,686 and Japanese Patent No. 57-100128 (Japanese '128).

The rejections are maintained for the reasons of record set forth in the previous Office actions. The declarations filed September 29, 2004 and May 2, 2005 have been considered but are unpersuasive.

4. The deficiencies of the declaration filed September 29, 2004 with respect to Satoh et al. and Jackson have been addressed in the non-Final rejection on page 6, paragraphs 6 and 8. The example in paragraph 7 of the declaration is not representative of Example 1 of Satoh et al. (col. 4, line 21 to col. 5, line 2) since it is unclear whether the Radel A-104P polyether sulfone tested in paragraph 7 contains hydroxyl groups as present in the hydroxyl groups-containing polyether sulfone of Satoh et al. (col. 4, lines 46-48).

5. The declaration in paragraph 8 attempts to reproduce Example 1 of Jackson (col. 6, lines 25-44 and col. 6, Table 1). However, the diverse relative amounts of bismaleimide (i.e. Compimide[®] 1206-R-60, 66.67 grams or 81.4% by weight vs. 40 parts or 75.8% by weight tested), cyanamide (2.75 grams or 3.4% by weight vs. 2.75 parts or 5.2% by weight tested) and bisphenol A novolac epoxy resin (12.5 grams or 15.3% by weight vs. 10 parts or 19.0% by weight) between Example 1 of Jackson and paragraph 8 of the declaration could unduly influence the DSC profiles of Figure 3. Furthermore, paragraph 9 reports curing only at 180°C for one hour, whereas Jackson does not complete the curing until further heating at 220°C for four hours.

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6. Example 2 of Table 1 is the closest prior art example of Jackson because it contains separate compositions of a bismaleimide and an epoxy/phenolic solution composed of bisphenol A novolac epoxy resin, a bisphenol A novolac curing agent and tetrabromobisphenol A (col. 5, Example 2, lines 51-60) blended with 2-methylimidazole. Jackson (col. 5, lines 13-15) acknowledges the function of the cyanamide in Example 1 to cure both the bismaleimide and novolac epoxy resin, thereby indicating a single curing profile. However, the presence of a separately curable bismaleimide and epoxy/phenolic solution wherein the compositions are B-staged at 163°C for 3.25 minutes, laminated at 180°C for one hour and completely cured at 220°C for four hours (col. 5, lines 36-42 and 66-67) inherently produces a dual cure profile.

7. The declaration filed May 2, 2005 is not an accurate reflection of Example 1 of Young (col. 5, line 41 to col. 6, line 10). Example 1 of Young employs 11.3 weight percent of tetrabromobisphenol A as opposed to 3.1 parts by weight in paragraph 7 of the declaration. It is unclear whether the Matrimid A bismaleimide employed in paragraph 7 is representative of the MDA-free hydrazide modified bismaleimide resin shown in Example 1 of Young or even the preferred N,N'-4,4'-diphenylmethane bismaleimide (col. 2, lines 29-30) or Compimide[®] resins (col. 2, lines 32-34) due to the lack of description of its chemical structure. Paragraph 9 reveals curing only at 180°C for one hours, whereas Young does not complete the curing until further heating at 200°C for two hours (col. 6, lines 6-9).

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8. The comparisons in both declarations utilize merely a single blend representative of the claims wherein the first composition contains a bismaleimide, monomaleimide, cinnamyl alcohol/dimer diisocyanate bis-carbamate and peroxide initiator, and the second composition comprises a rubberized epoxy oligomer, trifunctional solid epoxy, dicyandiamide and amide accelerator. The evidence is not commensurate in scope with the broadly claimed first composition embracing a curable monomeric or polymeric compound or resin and a curing initiator or curing agent, and a second composition encompassing a monomeric or polymeric compound or resin and a curing initiator or curing agent.

9. Such wide parameters of components include the examples described on page 5, paragraph 17 to page 6, paragraph 20 as well as the imidazole/anhydride adduct of claim 6 and the photoinitiators espoused on page 5, paragraph 18 and page 10, paragraph 30 along with any other combinations not explicitly described which are B-stageable and separately cured.

The following new grounds of rejection are advanced in response to the newly amended claim language of the first composition with the lower curing temperature curing without the curing of the second composition with the higher curing temperature.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al. Patent Publication No. 2003/0029559.

10. Yamada et al. (page 5, paragraphs 90-102) shows a blend of adhesives wherein low curing temperature adhesives are composed of a diacrylate and a peroxide initiator, and a high curing temperature adhesive contains a bisphenol A epoxy resin and an imidazole curing agent. According to page 2, paragraph 28, "the component curing in the low temperature side has not completely thermoset (i.e. B-staging) and the component curing in the high temperature side does not undergo the thermosetting reaction yet." The difference between the curing temperatures of the two adhesives is 20°C or more (page 1, paragraph 16).

Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent No. 63-154780 (Japanese '780) or Mase et al. Patent No. 5,261,156.

11. Japanese '780 discloses semi-curable adhesive prepared from Component A comprising an epoxy polymethacrylate, copolymerizable crosslinker and an initiator and Component B derived from an epoxy resin and a curing agent which is not cured at the curing temperature of Component A.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by
Mase et al. Patent No. 5,261,156.

12. Mase et al. sets forth an adhesive obtained from a mixture of different substances (col. 2, lines 57-66) wherein one of the substances is cured to temporarily adhere an integrated circuit (i.e. B-staging) and the other substance is curing in a different curing condition. The other substance does not cure under the curing condition of the first substance (col. 4, lines 65-68).

Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese '780 and Mase et al. as applied to claims 1 and 3-5 hereinabove, and further in view of Yamada et al.

13. The claimed separation of the curing temperatures of the first and second compositions of claim 2 is not recited. The references are described in previous paragraphs 10-12. It would have been obvious to separate the curing temperatures of the two adhesive compositions of Japanese '780 and Mase et al. by 20°C or more as taught by Yamada et al. in order to facilitate repair and enhance the continuity reliability (Yamada et al., page 1 paragraphs 10 and 11 and page 2, paragraphs 27 and 28).

14. Mase et al. is not limited to the particular first composition of claim 4 and epoxy compound or resin second composition of claim 5. It would have been obvious to employ the poly(meth)acrylate-initiator first composition and the epoxy resin-curing agent second composition of Yamada et al. and Japanese '780 in order to optimize the removal of the integrated circuit for repair.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. and Japanese '780 as applied to claims 1-5 hereinabove, and further in view of Roth et al., Marshall et al. and Japanese '128.

15. The imidazole/anhydride adduct of claim 6 embracing the adduct of 1,2,4,5-benzenetetracarboxylic anhydride and 2-phenyl-4-methylimidazole of claim 7 is not recited.

16. Roth et al. espouses an epoxy resin composition (col. 1, line 65 to col. 2, line 3 and col. 5, lines 48-49) curable in the presence of an adduct of 2-phenyl-4-methylimidazole (col. 7, line 24) and pyromellitic anhydride (col.7, line 42).

17. Marshall et al. sets forth an epoxy resin curing agent comprising a salt of an imidazole such as 2-ethyl-4-phenylimidazole (col. 4, line 57) and an anhydride which "exhibit[s] reduced hygroscopy and extended pot life (col. 4, lines 11-12)."

18. Japanese '128 shows a 2-methylimidazole-pyromellitic anhydride salt utilized as a curing assistant for an epoxy resin.

19. It would have been obvious to use the imidazole/anhydride adducts of Roth et al., Marshall et al. and Japanese '128 as the curing agent for the epoxy resins of Yamada et al. and Japanese '780 in order to reduce the hydroscopy and extend the pot life of the compositions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

rs
5/11/2005



ROBERT E.L. SELLERS
PRIMARY EXAMINER